# Chemical warfare agent detection

Lesson topic 4.2

# Enabling Objectives

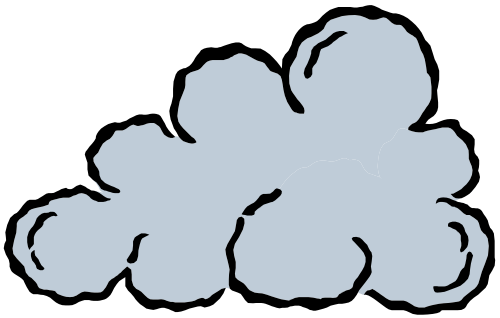
1. Perform the procedures to detect and classify chemical agent stimulants
- Describe the characteristics and capabilities of shipboard chemical agent detection equipment
- Describe the procedures to use the M256A1 chemical agent detection kit for unusual conditions
- Describe the procedures to use the M9 chemical agent detection paper for usual and unusual conditions

# Enabling Objectives

5. Describe the characteristics and capabilities of the M256A1 chemical agent detection kit
- Describe the characteristics and capabilities of the M9 chemical agent paper

# Chemical Agent Detection Kit M256A1

- Identifies the following
  - Blister agents
  - Blood agents
  - Nerve agents
- Vapor state only



# Characteristics

- Twelve sampler detectors
- 8 glass ampoules
- 3 test spots: blister, blood & nerve
- Chemical heater (for blister agent)
- Protective strips & Tabs
- Lewisite detection tablet

# Characteristics

- One book M-8 paper
- One set of operational instruction cards

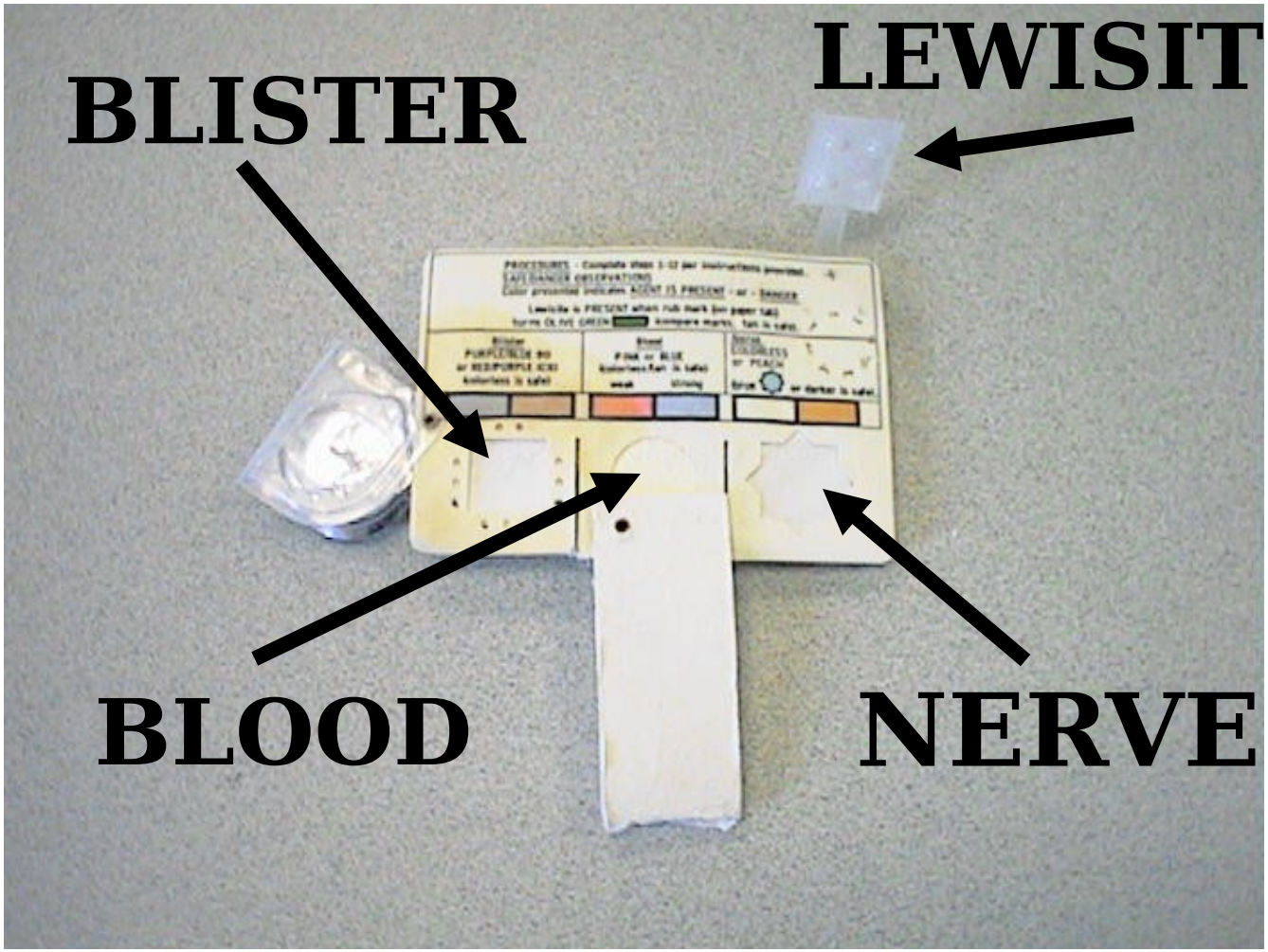
# Identifying agents

- Blister agent test spot
  - Purple/blue, mustard agent present
  - Red/purple, phosgene oxime present
  - Colorless, no blister agent
- Blood agent test spot
  - Pink or blue, blood agent present
  - Colorless/tan, no blood agent

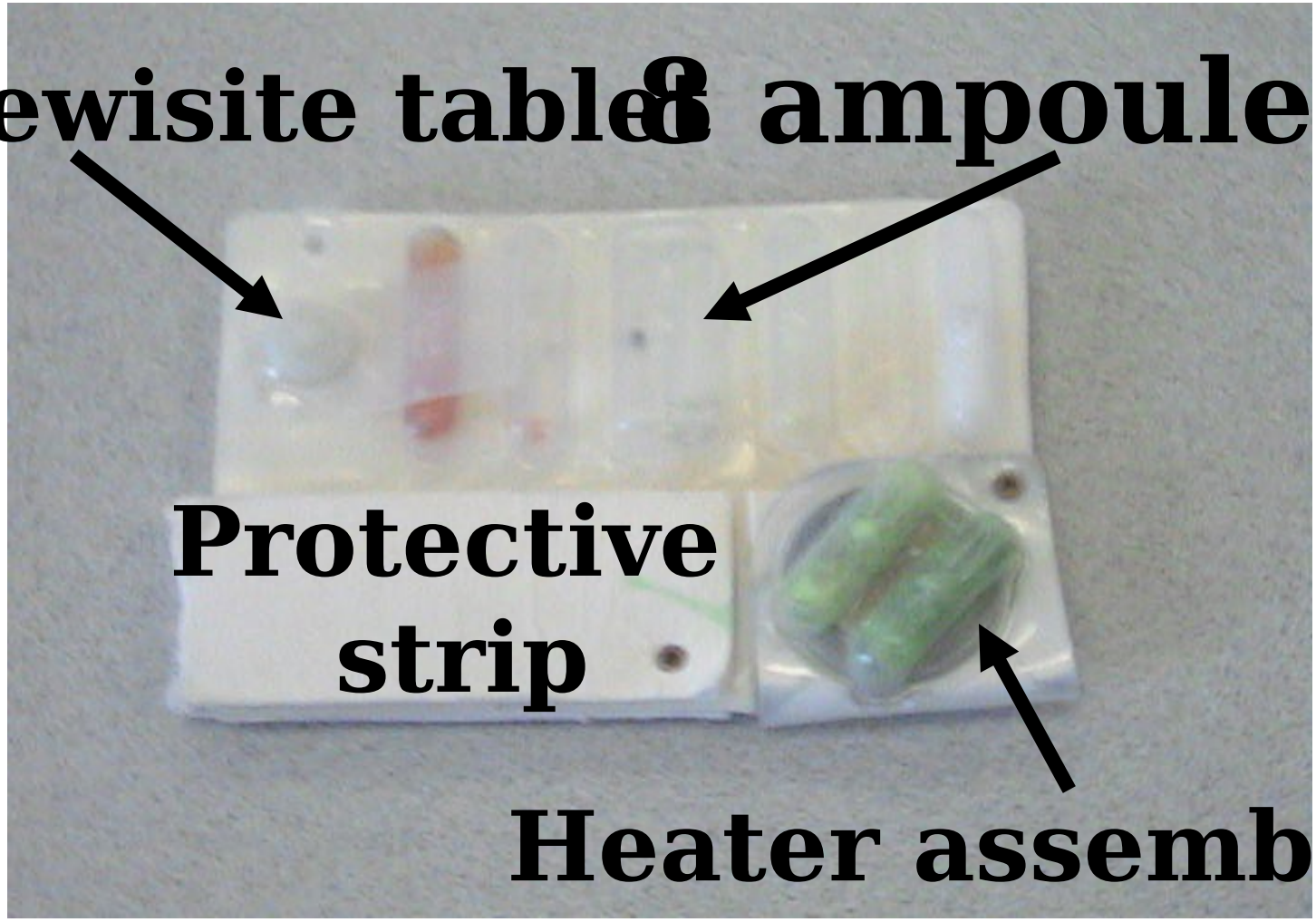
# Identifying agents

- Nerve agent test spot
  - Colorless or peach, nerve agent present
  - Blue, no nerve agent
- Lewisite marking pad
  - Olive green, Lewisite present
  - Tan, Lewisite not present

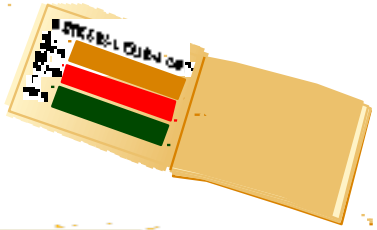
# M256A1 kit



# M256A1 kit

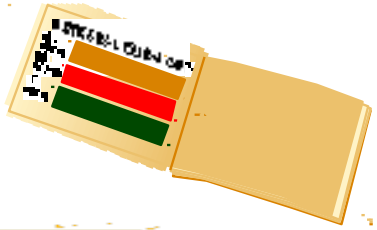

Lewisite tablet
8 ampoules
Protective strip
Heater assembly

# M-8 paper



- 25 sheets, 50 if perforated
- Capabilities
  - Nerve
  - Blister
  - Liquid form only
  - Response time 20 seconds or less

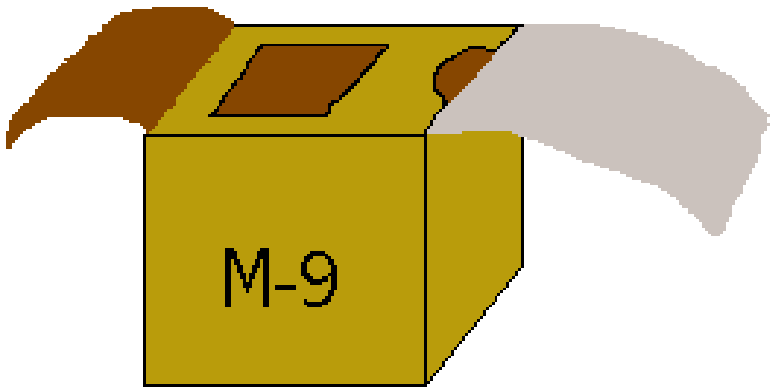
# M-8 paper



- Paper turns yellow, G-nerve agent
- Paper turns dark green, V-nerve agent
- pa

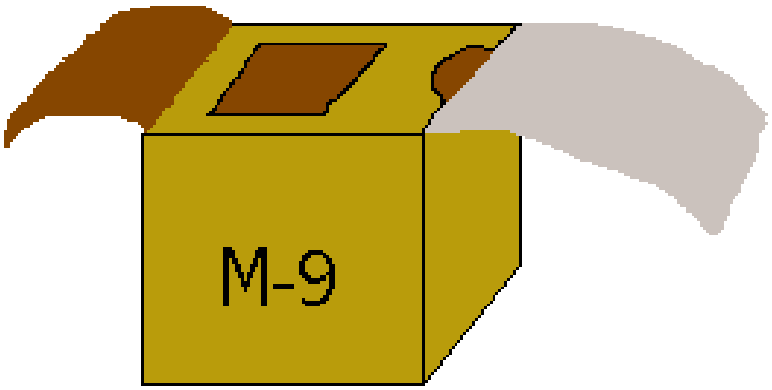
# M-9 paper

- Colored green for camouflage
- Adhesive back
- Single roll in a cardboard dispenser
- Detection capabilities
  - Nerve Agents (G and
  - blister agents (H and
  - liquid state only

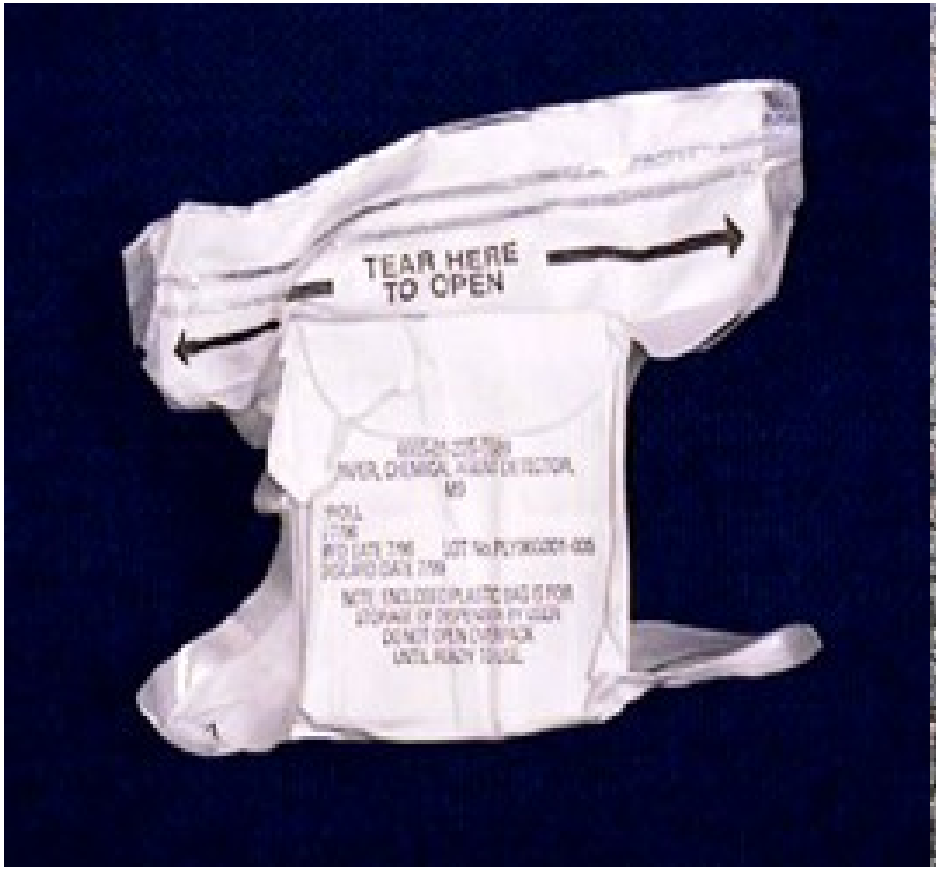


# M-9 paper

- Response time 10 seconds or less
- Will work in rain, snow and sleet
- Reaction is slower when paper is wet
- Only red color appears for all agents



# M-9 paper



# M-9 paper

- PAPER MAY CAUSE CANCER
- ALWAYS WEAR PROTECTIVE GLOVES
- DO NOT PLACE IN OR NEAR YOUR MOUTH OR ON YOUR SKIN

**DANGER**

**!**

**DANGER**

**!**

# Chemical Warfare Directional Detector (CWDD) or (AN/KAS-1)

- Shipboard mount
- Portable unit

# Chemical Warfare Directional Detector (CWDD) or (AN/KAS-1)

- Primary function
  - Passive infrared imaging sensor that detects nerve agent clouds
- Used for
  - Attacks against sister ships in a task force
  - Amphibious ships/boats proceeding ashore
  - Forces in the vicinity of the landing area

# Chemical Warfare Directional Detector (CWDD) or (AN/KAS-1)

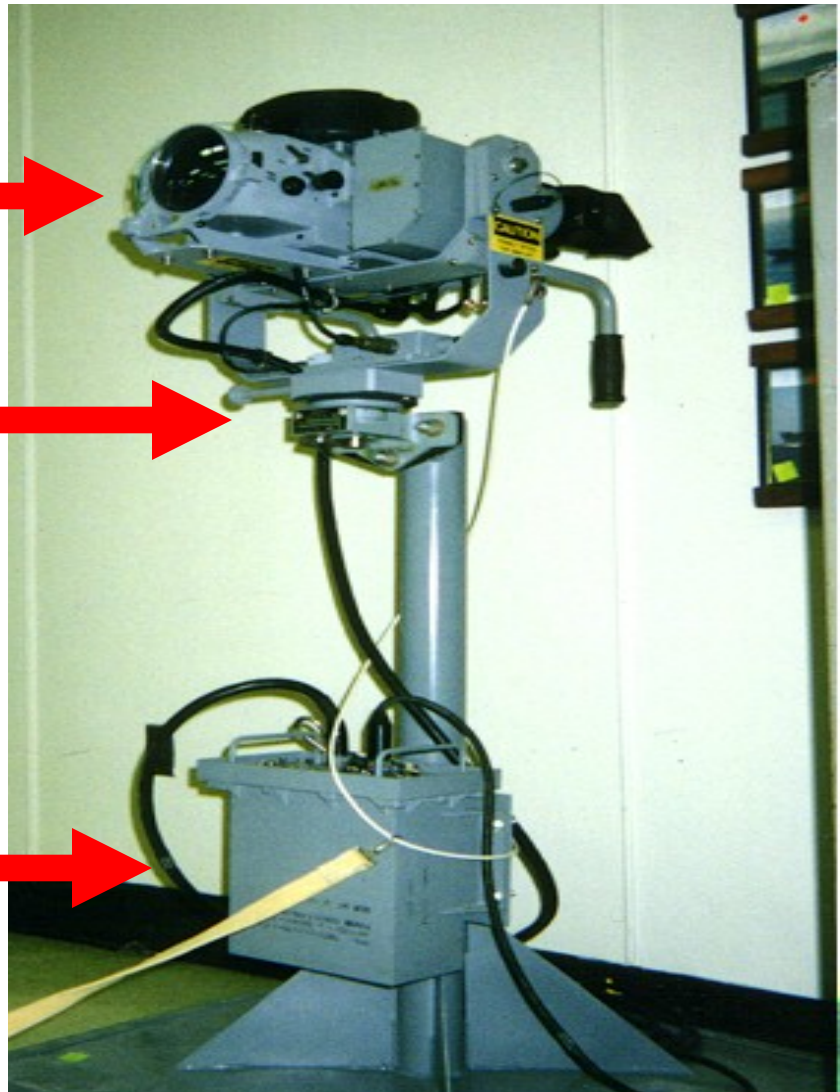
- Secondary functions
  - Useful in low visibility/night & surveillance
  - Relative bearings
- Components
  - Sensor unit
  - Pivot mount
  - Power conversion unit (PCU)

# Chemical Warfare Directional Detector (CWDD) or (AN/KAS-1)

**Sensor unit**

**Pivot mount**

**ower conversion unit**

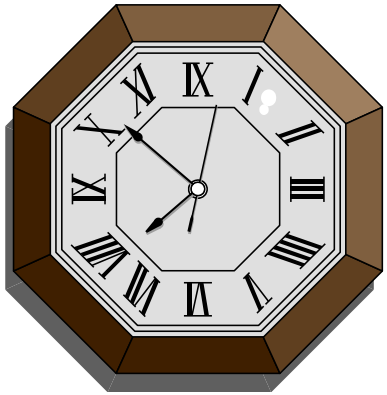


# Chemical Agent Point Detector System (CAPDS)

- Shipboard mounted
- Permanent unit
- Automatic
- Detects vapor nerve agents at a level of 0.3 mg/m3
  - Sarin (GB)
  - Soman (GD)
  - VX

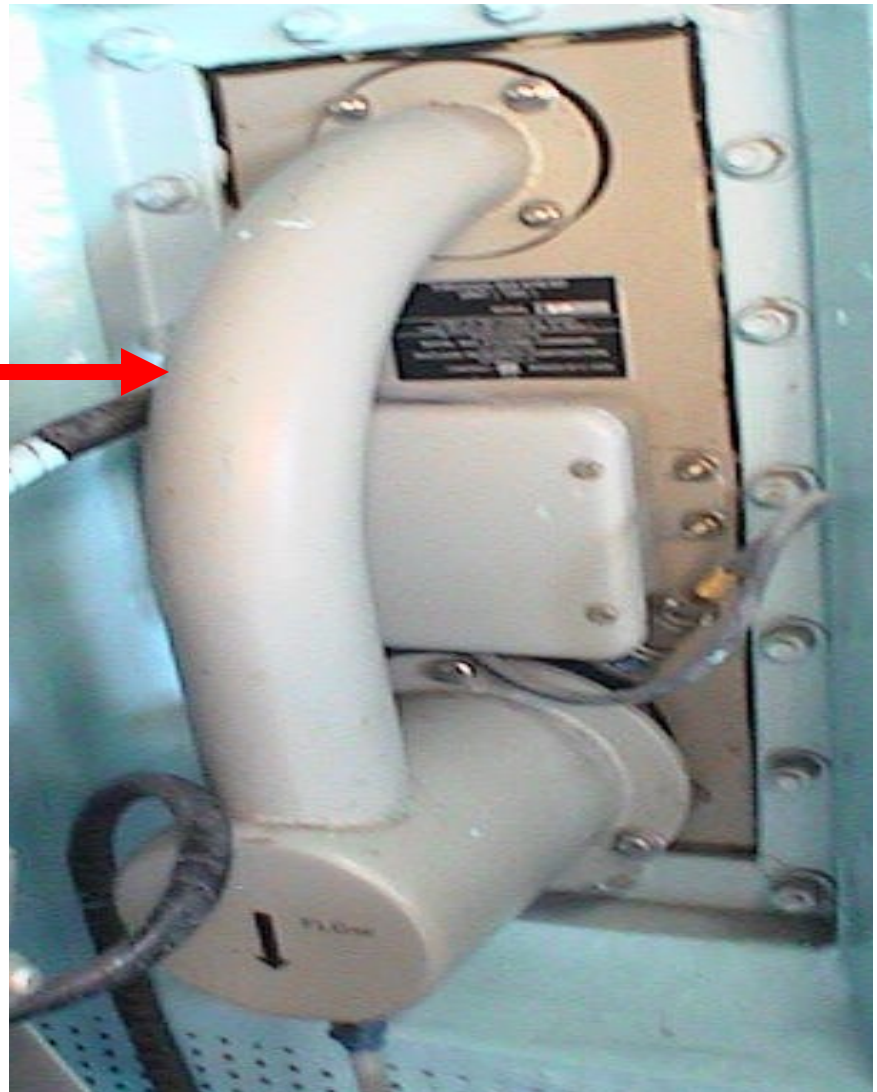
# Chemical Agent Point Detector System (CAPDS)

- Components
  - 2 detectors
  - 2 through bulkhead units (TBU)
  - 2 remote control units (RCU)
  - 1 Remote status unit (RSU)
- Response time 3 minutes



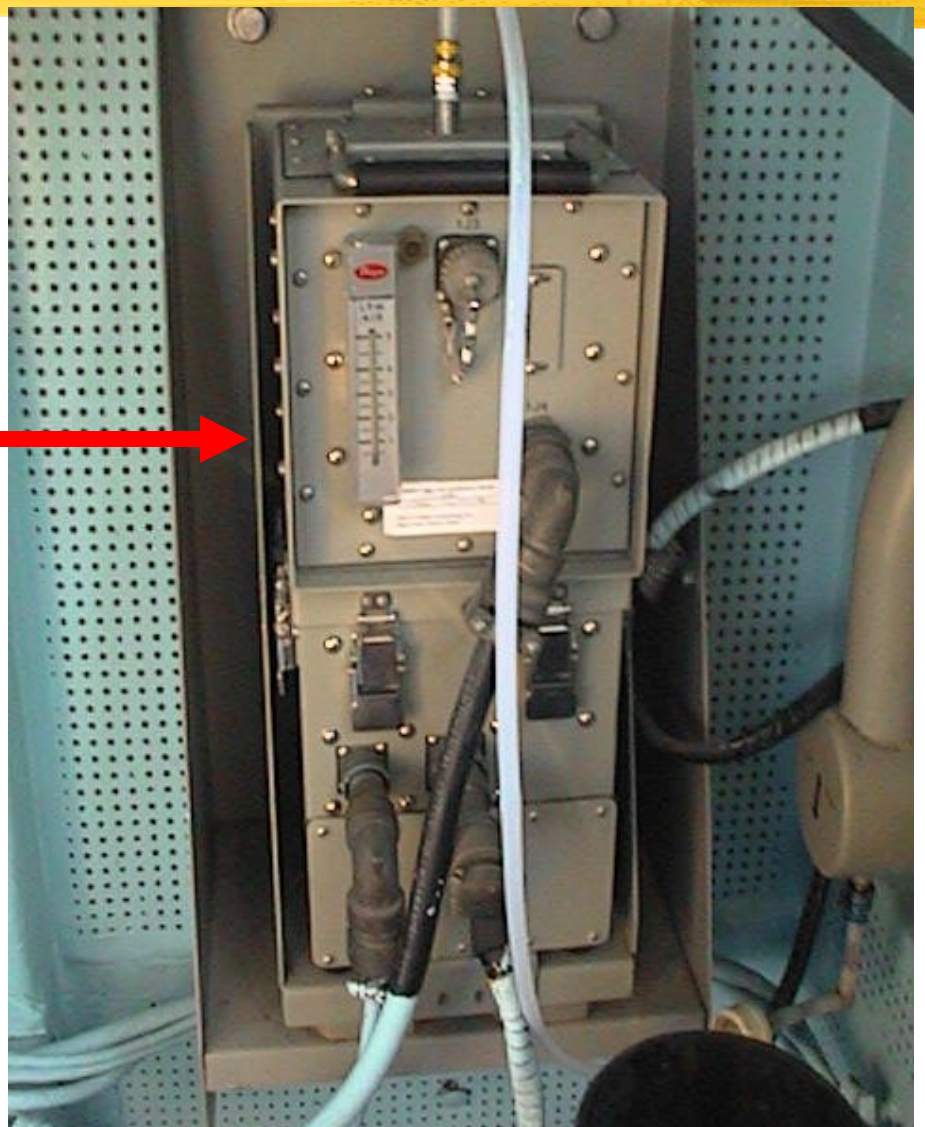
# Chemical Agent Point Detector System (CAPDS)

**TBU**



# Chemical Agent Point Detector System (CAPDS)

**Ionization chamber**



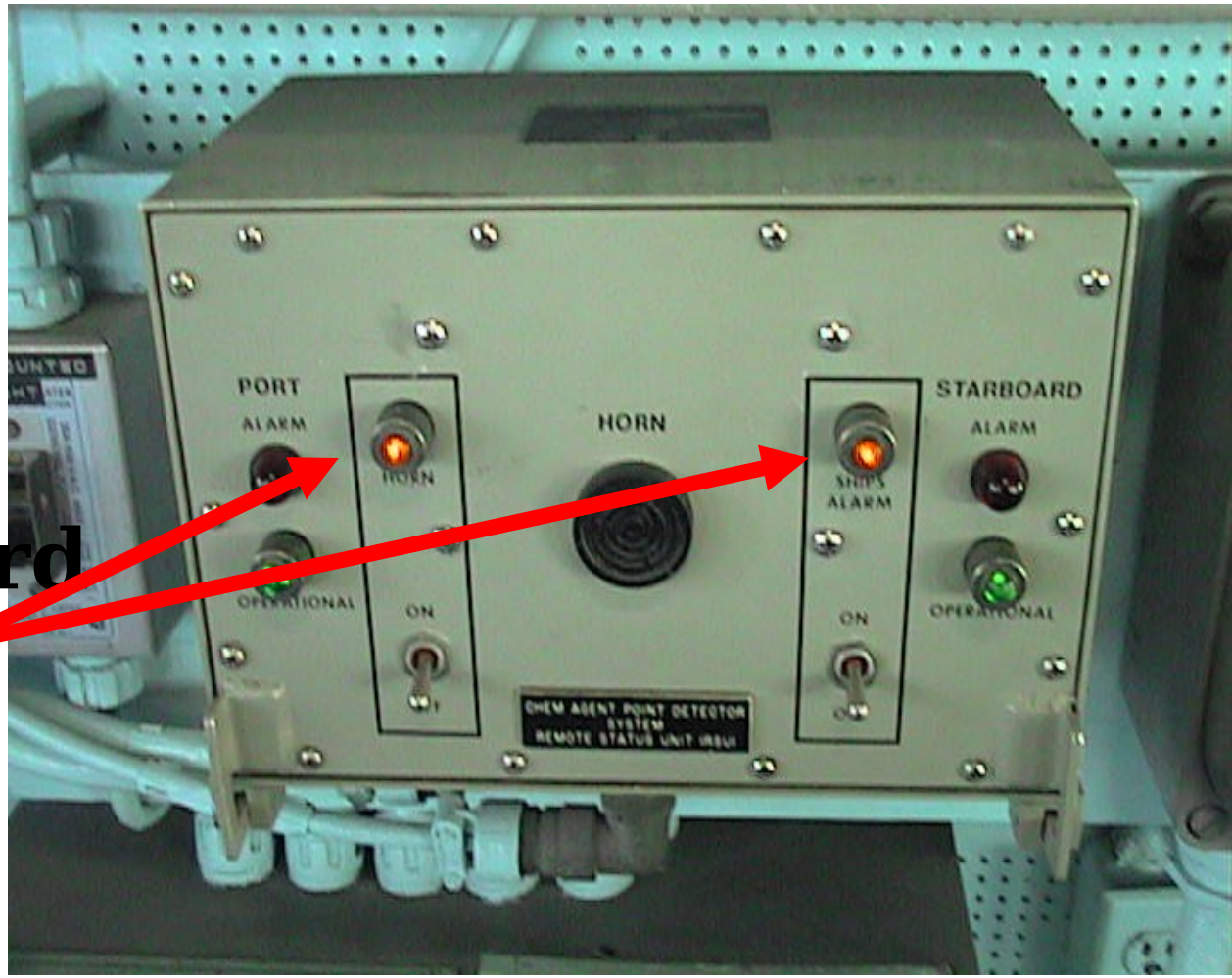
# Chemical Agent Point Detector System (CAPDS)

**RCU**

# Chemical Agent Point Detector System (CAPDS)

**RSU**

**ort & Starboard indicators**



# Summary and review

- M256A1 Chemical detection kit
- M-8 & M-9 detection paper
- CWDD
- CAPDS